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Clean Milk—its Production and Protection.*

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I have to admit that in the preparation of this paper at the request of my very dear friend, your chairman, I have experienced but little of the "joy of originating." Nevertheless, the subject is sufficiently alluring to make one conscious of other compensations. The work already done and published on "The Production of Clean Milk" is colossal, because of the world-wide width of its appeal, which has compelled the attention of men of vision in many departments of life in every progressive country, each attacking it from his own particular angle according to his professional interest in it, whether as producer, wholesaler, retailer, consumer, engineer, sanitarian, veterinary surgeon, or medical man.

That Great Britain has been a laggard in this campaign compared with some continental countries, and particularly with the United States of America, is common knowledge, and those who have held authority throughout the years in this country cannot complain that they have lacked beacons in the shape of men who have not wearied in pointing the way to better things. Probably in no country in the world is there a better understanding by its professional men of the problems attached to the production of a wholesome milk supply than in Great Britain. If they have erred, it has been in failing to tell the truth often enough and loud enough. True it is that within the last decade there has been some stirring of the dry bones, the route has been better mapped out and prepared for the traffic, but there is no evidence of any revolutionary march in this great cause, and the present tardy evolution towards better conditions in this country is altogether unworthy of an enlightened people.

I may be wrong, but I estimate that less than five per cent. of the milk supply of this country is obtained from cows that are subject to any kind of veterinary inspection under the Public Health Acts. I know of only one county in Scotland, Lanarkshire, that undertakes the routine veterinary inspection of its dairy herds year by year, and without claiming much for a single yearly inspection, I can, having knowledge of what we are able to accomplish in the elimination of cows with tuberculous udders, in compelling improved equipment and methods in the dairy, and in speeding up repairs and improvement of premises, form some estimate of the beneficial results of this work. To Dr. John T. Wilson, Medical Officer of Health for the County of Lanark, belongs the credit of initiating the work of the veterinary inspection of dairy herds in the county almost twenty years ago, and throughout that period, with the exception of the war years, he has been increasingly anxious to have reports regarding every herd, large or small, in the county. There is, perhaps, no veterinary service that has such consistent and constant value for the public health alike in its immediate and its remote results. While the fight against udder tuberculosis by veterinary inspection is being carried on, the conditions inimical to clean milk production are gradually being undermined.

Now, as I have said elsewhere, no Local Authority that has failed to take advantage of the optional powers it possesses for the elimination of the cow suffering from tuberculous mastitis can justify the taking of more than an academic interest in the general contamination of milk by saprophytes. Consider for a moment the inconsistency of Local Authorities who conduct well-equipped hospitals and sanatoria for the treatment of tuberculous patients and fail to move in the matter of providing the patients with tubercle-free milk or doing anything at all to safeguard the consumer of ordinary milk against a potent source of tuberculous infection which must be operating daily to increase the crop of human patients requiring treatment. Surely the time is more than ripe for the reinstatement of a Tuberculosis Order with its compelling powers. Even now a certain and rich harvest awaits those who are sent out to this work of veterinary inspection of dairy herds in virgin districts, and with the literature on every phase of the subject of clean milk production that is now available, those who consider themselves novices in public health work may, with a little application and experience, become as expert inspectors as any. But however completely the subject has been written up in the light of our present knowledge, and however much those who, like myself, have the temerity, notwithstanding, to take it up again, risking the criticism that much we say is but "cauld kail het again," its importance demands that it must be kept under supervision, revision, and debate year by year, and all proceedings published if we are eventually to convince a stoical people that so long as they tarry they are culpable for the loss of human life, and inestimable values in bovine animals. Whether the desired results are to be obtained by

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compulsory legislation for the improvement of the methods of those presently engaged in dairying or not, it seems essential that there should be inculcated at school or elsewhere in the rising generation of milk producers such a basic knowledge of the general principles governing the production of clean milk that they will, through sheer conviction, despise and reject what they know to be wrong, and adopt and put in practice as of second nature the only methods by which the ideal commodity can be procured. Even though we were to-day endowed with the powers of the Milk and Dairies Act, we would find it an irksome matter to bring into line some of the older people who, regarding us as troublesome faddists, would readily revert to their natural and time-honoured methods so soon as the inspector's back was turned.

The term "*clean*" when applied to milk or any other kind of food exposed to the air before consumption is only a relative one, since germ-free milk as an article of food is a thing unknown. In so far as we regard the term as synonymous with "*wholesome*," milk is most dangerously unclean when it contains specific organisms capable of inducing disease in the susceptible consumer, even though it be produced under conditions which procure for it the least possible contamination with non-pathogenic bacteria. On the other hand, a milk considerably polluted with air organisms and even fæcal matter, and unclean to a degree, in the generally accepted sense of the term, may be consumed without bad results if its bacterial flora does not include pathogenic organisms. The chief consideration is the absence of the *bacillus tuberculosis*. When considering the quality of the other bacteria found in milk, we reckon that a small count containing a proportion of gas producers and liquefiers would indicate greater danger than millions per cubic centimetre of more innocent bacteria. But it is almost invariably true that the presence of such lactose fermenters is accompanied by a high total count. When they are present in great numbers a gross degree of contamination by manure is indicated, as these organisms do not multiply in milk that is kept at a temperature well below blood heat. As already stated, a measure of innocent contamination is the constant inseparable condition of all milk before it reaches the consumer, as it is of all our other foodstuffs, yet we take no trouble to estimate their bacterial content, and institute comparisons with milk. If this were done and the results disclosed, is it not likely that we would find super-sensitive people who have no sense of the fitness of things taking uncalled-for precautions for the protection of their foodstuffs, and perhaps discarding each day the exposed surface layer of all solid materials through their ignorant fear of multitudes of entirely innocent germs? It is, therefore, meet that we should not concern ourselves in our considerations regarding milk so much with actual numbers of innocent bacteria because of the changes they can produce in milk as it ages, remembering that, though their presence does cause turning or souring of the milk, thus rendering it unsuitable for the ordinary uses to which fresh liquid milk is put, the transitional process when complete but provides a new product that is as much sought after for its own food purposes as the original article. Consider, for example, the millions of innocent bacteria that are to be found in every cubic centimetre of first-class butter-milk. Mere numbers are surely misleading, and often meaningless in the absence of reports regarding the health of the milkers, the health of the cows, the care used in producing the milk, and the handling of it at all stages, including a suitable temperature during transportation. Regular veterinary inspection is the keynote—the prime consideration. The counting of bacteria in milk at special periods after it has been drawn from the cow serves, however, one great purpose in the indication it gives as to whether, in its production and handling, carelessness has obtained to a greater or lesser extent, thus permitting a heavy initial contamination which will turn the milk at an unduly early stage. Moreover, the deduction is permissible that those who are carelessly unfaithful in this respect are likely to be equally unfaithful in avoiding the faults or correcting the conditions that are potent to yield the more serious contamination of the milk supplies, as, for example, the inclusion of milk from abnormal udders without any attempt to find out whether the organs are tuberculous and their product rich in tubercle bacilli.

The capacity of milk to obscure its own uncleanness from the naked eye is the protecting mantle of the unclean dairyman, and the early consumption of the great bulk of our ordinary milk supplies is, to say the least, a most providential circumstance.

It is also a fortunate, if fortuitous, matter that in the winter house-feeding season, when initial contamination is greatest, the lower temperature to which the milk falls, or can be brought to, by chilling after removal from the cow, hampers their multiplication so much that the universal experience is that winter milk keeps better than that produced in summer, when there is a much lower initial bacterial contamination.

A careful inspector of equipment and methods at a dairy can, with fair exactitude, prophesy the result of a laboratory test applied to the milk on the day of his inspection, the milk sample having been taken under proper conditions direct from the farm to the laboratory. It may be asserted that nothing short of protracted and prohibitively expensive laboratory work can give a true indication of what occurs in the cowshed day by day, but the need for such tests is reduced to almost nothing if good reports come through under a proper system of veterinary inspection. Perhaps some day the chemist will produce a simple practical test which will enable an inspector to detect and condemn unclean supplies at any stage en route to the consumer, but the time is not yet. A simple test of this kind, capable of repeated use with little expense or loss of time, would be a great boon; the clean producer would secure his reward, and a lever would be applied to the careless dairyman that would at once compel the study and adoption of better methods and equipment if he hoped to retain his market.

Brom-Cresol Tests.

I fear the expectations entertained regarding the help that the Brom-Cresol Test would be able to afford are not likely to be realised, as in practice it is found that too many factors can operate to influence the reaction, and the test is not sufficiently delicate to disclose anything but a gross contamination.

The test may be applied either by the Brom-Cresol Test Papers, which are steeped in the milk, or by mixing solutions of Brom-Cresol with the milk itself in certain proportions, and noting the reaction.

For the past two years we have been trying out the Test Papers, and cannot say they can do more than corroborate the opinions formed by naked eye examination. In order to prove the test in watery solution, we brought, during the month of May, a variety of milk samples to the county laboratory, and the following is the report of Dr. J. Hume Patterson regarding them :—

Notes on Brom-Cresol Purple Test.

By J. Hume Patterson, F.R.F.P.S. (Glas.), D.P.H., Bacteriologist to the County of Lanark.

Examination of 101 Normal and 18 Abnormal Milk Samples.

The method employed was to take 10 c.c. of milk in a clean test tube and add one drop of saturated watery solution of Brom-Cresol Purple, noting the change of colour produced. Colour standards for comparison were prepared by adding quantities of N/10 soda, increasing from group to group by ·2 c.c., 10 c.c. of fresh milk being used in each case.

Group	1	2	3	4	5	6	7	8
N/10 soda added ...	0	·2	·4	·6	·8	1·0	1·2	1·4

It was found, however, that in adopting this colour standard the lack of distinction between groups 1 to 6 made it necessary to regard them as one (the first) group; nor was there more than a very slight difference between Nos. 6, 7, and 8, which are, therefore, classified together as the last group. Variation also crept in with each fresh milk put on for colour standard, according to its acidity. The results obtained were as follows :—

	Pathogenic Bacteria.	*Group.*
Normal Sweet Milk.		
90 samples from 46 herds	Nil.	First.
8 samples from individual cows ...	Ditto.	Ditto.
Normal Skimmed Milk.		
3 samples from individual cows ...	Ditto.	Ditto.

Abnormal Milk from individual cows.

	Pathogenic Bacteria.	*Group.*
1 sample.	Nil.	First.
3 samples.	Ditto.	Last.
1 sample.	A few tubercle bacilli.	First.
1 „	Many ditto ditto.	Ditto.
1 „	Ditto ditto ditto.	Last.
1 „	A few streptococci.	First.
1 sample.	A few streptococci.	Last.
2 samples.	Many ditto.	Ditto.
1 sample.	Numerous ditto.	Ditto.
1 „	Ditto ditto.	Reaction a dirty greyish colour—could not be classified.
1 „	Few staphylococci.	Last.
2 samples.	Many ditto.	First.
1 sample.	Ditto ditto.	Last.
1 „	Numerous ditto.	First.

It will be seen from the above that the results are far from consistent, and that the test is less helpful than naked eye examination in the detection of abnormal milk.

In order to test the value of the reaction in a mixed milk containing part of a bad milk, the following experiments were carried out :—

(a) A mixture of 1 part of an abnormal milk in the last group with 5 parts of normal milk gave the reaction of normal milk.

(b) Five samples of streptococcal milk belonging to the last group were each mixed with normal milk in the proportion of 1 in 5, and the mixtures all gave the reaction of normal milk.

The test is, therefore, incapable of detecting the abnormal milk of one cow when it is mixed with that of other four healthy cows.

Local Authorities should have power to deal with polluted, as they now can with chemically deficient, milk. But perhaps the prohibition of the sale for human consumption, in a raw state of milk, polluted with bacteria beyond a certain stipulated limit would be impracticable in the near future, or at least until producers and their assistants have had the advantage of free technical instruction brought to their doors.

The development of the cult of clean milk production is essentially a thing of recent years, and the credit of leading the way belongs very much to America. Nevertheless, it is peculiarly true that in years long past there were to be found here and there in our districts some families so naturally clean in all their habits and methods that their produce must have been good enough to pass the bacterial standards for our present day graded milk supplies. Doubtless even in these remote days the clean producer in some measure got his reward in the better commercial value of the products manufactured from his milk, and it is only within the past thirty years that the greater consumption of raw sweet milk began to develop, at least in the populous districts of Central Scotland.

The stability of milk has been as tender and violable in all the ages as it is to-day, and this must have operated, when inspectors were unknown, as the constant silent mentor of the butter and cheese producers of past days, compelling them to study and eliminate the factors that crept in and operated to prejudice the quality of their produce.

With the greater development of the consumption of raw sweet milk before it is many hours old, and therefore before anything but the greatest kind of special pollution has had time to effect chemical changes in it, causing its rejection by the consumer, this potent test of the dairyman's activities in respect of cleanliness has been lost for over fifty per cent. of the milk produced in this country—it escapes through the facile door of an early consumption.

If we have any pretensions as to the sanitary condition of our milk supplies, is it not astounding that almost nothing is done to deter the producer of polluted milk beyond the complaints that are made to him by the retailer, who sees the gross evidence when his counter vessel is almost empty, or the housewife who reproaches him regarding the sediment in the bottom of her milk jug? These undeniable evidences of contamination are the daily experiences that cause a discerning public to use less milk than they should. But if the public could be fully reassured (and the time is not yet, except in the case of graded herds) by a declaration of the results of veterinary and other inspections showing that the available milk supplies were clean and wholesome, it is certain that the demand would increase amazingly. It is because they are already in a position to guarantee the great bulk of their milk supplies in many parts of the United States of America that the consumption of milk per head of the population is twice as much as that of Great Britain. Increased consumption here would at once influence for good the public health, and it would be difficult to estimate its more remote influence on the prosperity of the industry—the wealth of the nation and the increased fertility of the soil that would inevitably accrue from the maintenance of a larger number of dairy cows. Whence, therefore, the lukewarmness of the powers that be towards so clear an issue? In so far as the public are not sufficiently alive to the advantages of clean milk and the dangers of the unclean commodity, it is clearly our duty to declare the situation, endeavouring to make an impression by sheer importunacy. If it be said that consumers are now sufficiently interested, let them force the hands of their representatives on public bodies to push the adoption of universal veterinary inspection of all dairy herds. It is true, of course, that very many of our important municipalities are increasingly interesting themselves in a practical way and sparing no expense in the provision of a wholesome milk supply for their citizens, and the influence of the visits of their officials must be salutary in the improvement of the whole technique of milk production in the cowsheds from which their supplies are drawn. But apart from the work of such officials, as I have already stated, our ungraded herds throughout almost the whole kingdom are subject to almost no kind of inspection in regard to the health of the animals or the workaday methods of producing and protecting milk that prevail at the farms.

We will now consider—

THE ESSENTIALS OF CLEAN MILK PRODUCTION AND THE FACTORS THAT OPERATE ADVERSELY IN THE COWSHED FROM THE POINT OF VIEW OF THE VETERINARY INSPECTOR.

While many of our large cities have certain orders of local application, the optional powers of County Public Health Authorities to conduct the routine veterinary inspection of dairy herds are contained in the Dairies, Cowsheds and Milkshops Orders of 1885, 1886, and 1889.

On entering a cowshed, the veterinary inspector immediately "senses" the quality of its atmosphere, making deductions regarding ventilation, and, accompanied by the owner or a responsible attendant, proceeds by a series of questions to derive information regarding the cows, their general health, experience of udder troubles, etc., and other matters that stand in need of supervision. And since his special duty is the detection of cows yielding milk containing tubercle bacilli, the examination of the udder of every animal in milk or to be in milk before his next visit is the chief consideration. It is not my intention to deal with the diagnosis of the tuberculous udder, unless it is asked for during the debate, but perhaps I should say that the veterinary inspector should err on the side of taking samples from too many rather than too few udders, bearing in mind that the slightest induration of the udder tissue may be the initial stage of a tuberculous development, and especially if the secretion appears normal and there is no history of a painful weed. Nor need I deal with the question of the proved infectivity of tuberculous milk, especially for young children, or with the known capacity of milk to act as a carrier of the virus of certain infectious diseases of man if handled by infected or infective people either in the byre or in transit to the consumer.

SOURCES OF ORDINARY NON-SPECIFIC CONTAMINATION.

The Condition of the Cow is the paramount consideration, since, if the cow is in a filthy state, the milk is likely to suffer gross contamination during the process of milking, due to particles of dirt, hairs, scales, etc., seen and unseen, falling into the milking pail. Since you are all no doubt familiar with the appearance, I need not describe the picture of a much-soiled cow; but it is to be constantly remembered that the filth is derived from the excreting organs of the animal which nature has placed so near to her milking apparatus. I am not, however, one of those who criticise nature's design on this account.

In some of our best farms, where the homes are well ordered, every animal well fed and all horses groomed to perfection, we not uncommonly find the people idly tolerant of disgraceful pollution of the milch cows in the byre. An anomaly of this kind provides a useful text for an object lesson on the spot.

In recent years it has been the vogue of some experts to declare that it is quite unnecessary to have up-to-date premises for the production of even

certified milk, and that they would be prepared to produce that quality in a very inferior cowshed by adopting certain expedients. That might be true of a special experiment conducted by experts, but to suggest that it is a practical problem to produce high grade milk day by day in bad premises, knowing as we do the liability of the human element to failure, even in good premises, is altogether too misleading; and what could one hope for when the adverse factors are overwhelming and ever present? Even the experts would deteriorate through sheer ennui; but doubtless the laudable object of their declaration was to encourage to better things the many who have no reasonable prospect of that immediate renovation of premises which they had deemed essential if they would aspire to the production of a higher grade of milk.

Although I do not wish to poach the domain of Professor Linton's paper, I must submit that in my experience the chief factor operating to soil the dairy cow is the too frequent unsuitability of the stall for its occupant, either in respect of its length or width, and particularly if this be associated with faulty construction of floors, dung channels, etc. When cows are properly stalled, soiling of the udder and hind parts is infinitesimal, and the work required of the attendant to prepare them for clean milking is very little.

But who would contemplate with serenity the daily supervision required and the labour entailed in ensuring the adequate preparation for clean milking of a herd in which ninety per cent. of the cows were grossly soiled, and which, though washed clean, would be at once susceptible to re-soiling? Even when cows seem perfectly clean, the udders and teats should be washed, and the flanks next to the milkers should be wiped with a clean wet cloth to remove loose hairs, scales, etc., which, if the udder be handled in the dry state, readily fall into the open-mouthed milking pail that is still used in ninety-nine per cent. of our herds. From the beginning until the end of her lactation period, every cow should have the hair of the tail (excepting the tuft), which should be shortened, the udder, the flanks, and quarters clipped short with a pair of horse-clippers. This requires frequent repetition and greatly reduces the labour of grooming, and the clipped parts, if in need of washing, dry more quickly than when the hair is long.

All grooming of cows should be done not less than one hour before commencing to milk, and if there be a suspicion of dust in the atmosphere before milking, it should be sprayed with water. Also to ensure the highest degree of purity of the atmosphere at milking time, all other work likely to contaminate it, such as removal of manure and the carrying of fodder, should be done some time before the milking period.

The effect of negligence in these matters in respect of the higher bacterial count which it causes has been well proved experimentally.

Bedding.—It is a moot point whether, when cows are housed during winter, the balance of advantage is in favour of a heavy straw bed, a moderate one, or no straw bed at all. Bedding of any kind causes material pollution of the atmosphere, and, *ipso facto*, of the milk. On the other hand, a liberal use of straw in byres with badly-constructed stalls helps to keep the cows clean. Again, while the ostensible reason for using straw for bedding is to afford comfort to the animals, we find it used most liberally on farms that have it in such quantity as a result of cropping operations that they must put it through the byre to have it properly incorporated with the manure and returned again to the cropping fields. On farms where the industry is chiefly or solely that of dairying, we find that little if any expense is incurred in the purchase of straw for bedding dairy cows, and I know of many such, where no bedding material of any kind is ever used, excepting for sick animals, and I have not noted that the animals suffered in any way for want of it, and its absence is a distinct advantage in the production of clean milk.

The relation of the dungstead or manure heap to the cowshed is a very important matter. It is often placed too near on the score of convenience, and with the wind in the wrong direction the incoming air carries its effluvia into the byre, and in warm weather the place is polluted with flies bred in the manure, which disturb the cows and play a not unimportant rôle in polluting the milk through falling into it. I consider it a quite practical step to do away with all of these convenient dungsteads, even where the daily output of cowshed manure is heavy. The dungstead is the great blot in the picture of almost all our dairy premises, both from the æsthetic and sanitary point of view. The manure has eventually to be manhandled and removed to the fields, and there is no good reason why its storage should not take place in or near to the fields it is intended to fertilise. To accomplish this, and still give a convenient coup to the individual who cleans out the byre, there should be provided, convenient to the cowshed, a hard-bottomed stall or dugout for the housing of a manure cart to receive the manure direct from the barrow. When it is full, have it removed to a place of storage distant from the farm premises. If the equipment includes a mechanical dung-spreader, it can be substituted for the cart at certain seasons, when the weather conditions permit the immediate spreading of fresh manure on the fields.

The Milker.—Only persons in perfect health and who have had no access to patients suffering from infectious diseases should be allowed to milk cows. They should wear clean overalls during milking, and have thoroughly washed their hands with warm water and soap before beginning. The washing of hands, perfunctory though it often is, obtains in many cowsheds, but clean overalls are very little worn; indeed, the condition of the cows in too many places would soon soil the clothing, and thereby reflect the state of the cows that the milker had handled. The re-washing of the milkers' hands after milking each cow is too often done in a pail of water set on the floor and used by all on duty till the water has lost its capacity to cleanse. Re-cleansing of hands

should be done in running water. The best fitment is a small tap constantly running clean water into a small overflowing basin fixed on the wall of the byre at a convenient place.

Before the milkers begin, a chief assistant should draw two or three streams from each teat of every cow into an enamelled cup, taking note of the condition of each quarter and examining the milk so drawn as to its appearance before emptying it into a larger receiving dish and proceeding to the next cow. This first milk usually contains more bacteria than the remainder, and though discarded as market milk on that account, it may be given to pigs or calves. If this examiner-in-chief finds anything abnormal in any quarter of a cow's gland, or in the appearance of the milk, precautions are taken accordingly. When this first milk from each cow is simply drawn on to the floor by the milker when he commences to milk a cow and is not at once washed away, it soon sours and provides a menace to the cow's udder when she lies down on the soiled floor. The marking of our official score cards for Graded Milks suffers when this fore milk is not discarded, and this is based on the experimental evidence of many researchers, who have found it to contain a relatively high bacterial flora. Nevertheless, it is noteworthy that Heinemann should say on page 272 that "The advantage of keeping the first streams separate from the final product is apparently very small and hardly compensates for the additional work."

Dry versus Wet Milking.

Though it is admittedly not an easy matter to carry out dry milking when teats are short in a recently-calved cow, it is the method which should be insisted on in every cowshed. Dry milking, when adopted in conjunction with washing of hands, udders and teats is easily carried out, as the hands and teats are then in a flexible condition. The rather common practice in some districts of moistening dry and often unwashed teats and hands with saliva or milk to facilitate the milking process is objectionable, repulsive, and, it may be, highly dangerous.

Milking stools should be kept scrupulously clean and housed in a clean atmosphere, as they are repeatedly handled by the milker when passing to and from each cow, and it is useless to wash hands if they are to be at once soiled in carrying a dirty stool.

When each cow is finished, the milker should remove with a clean cloth any wetness that may be on the teats, and at once carry the full milking pail direct to the weighing machine in the milk-cooling premises, or if milk-recording is not done, to the sieve set into or connecting with the tank over the chiller. On no pretext should it be permitted to collect the milk drawn from the cows in a large, open-mouthed receiving can placed on the byre walk—perhaps between two rows of cows facing the walls—until it is full, before it is taken to the milk-cooler. This practice is often carried on as a matter of convenience behind the back of the inspector, and when we come across it the dairyman does not readily demur when we remove the can, as he knows very well that milk so collected is subject to many happenings which I leave to your imagination.

Some people sieve the milk two or three times, thinking thereby to make it cleaner, but, although the amount of visible detritus is reduced, it has been shown that this increases the bacterial count if the same strainer is used on each occasion.

Returning to the byre, the milker rinses his hands at the tap, wipes them dry, and proceeds to another cow, avoiding as much as possible any contact of his hands with any part of the cow but the teats.

Milking Pails.

Pride of place in clean milk production must be given to the covered milking pails which are now on the market in some variety, because of the protection they afford the milk from contamination from above during the process of milking. Whatever other precautions are taken to safeguard the milk, their use at once improves by lowering the bacterial count. I know of no dairy producing ordinary market milk where they are in daily use, but a good many of our graded herds in Lanarkshire have them, and the marking of their score card benefits thereby. But, though it is the case that those who use hooded milking pails are, without exception, people who make sure that all udders are clean before milking, it is obvious that the greatest advantage from their use would be got in byres where little attention is paid to the condition of the cows. It is admittedly an almost impossible matter to milk with certain aim into the small and, in some patterns, almost vertically placed opening of a covered milking pail, a recently-calved Ayrshire cow with a turgid, square-set udder and short stiff teats set well apart, but with a little practice the great majority of cows, and especially long-teated ones, can easily be milked into them. A little milk may be lost through faulty aim, but, on the other hand, if a full covered pail be upset by a fractious cow, the pail can be recovered almost without loss of milk, whereas if such an accident befals an open-mouthed pail all the milk is lost. Some of the patterns with large and more facile openings than the usual type have a removable lid, into which is fitted a strainer of specially-woven cloth, and so long as the strainer is clean, the results are as good as with those of smaller openings. Moreover, when the milking is over, a supervisor can tell from the appearance of the straining cloth whether the individual milker has been handling any unclean udders. It would obviously be disastrous to milk cows on to a straining cloth after its colour showed that it had become soiled.

Though it is true, even now, that with few exceptions the milk drawn from the apparently healthy quarters of cows suffering from mastitis or induration of one or more quarters is added to that got from the healthy cows, it is obvious that gross vitiation of the milk cannot be avoided if cases of this kind or animals that have markedly sore teats or that have retained fœtal membranes, or that suffer from uterine mischief

with purulent discharge, or that have profuse diarrhœa or any disorder capable of prejudicing hygienic milk production, are not put into isolation and their produce used for other purposes than consumption in the raw state by human beings until they are fit to re-enter the common dairy byre. It is regrettable that so very few dairies are provided with suitable isolation hospital premises for the treatment and handling of such cases.

Milking Machines.

Designed to save labour, milking machines have to some extent gained the favour of those milk producers who have experienced trouble in securing or keeping efficient hand milkers, or who, having a bent towards engineering, find pleasure in keeping the parts in perfect order. They have very often been discarded by people who were careless in their treatment of the apparatus, and it is perhaps true that the number in use to-day is no greater than ten years ago. If kept in proper order, the milk drawn by a milking machine should have the minimum of contamination, but only a little neglect is necessary to render the bacterial count very heavy.

Chilling of Milk.

The effect of chilling the milk immediately it has been drawn from the cow is to inhibit the growth and multiplication of the bacteria it contains, and the greater the degree of refrigeration the better. The process should never be carried out elsewhere than in the pure atmosphere of a clean milkroom, which for convenience should be situated near to, but quite separate from, the byre. The advantages of chilling are now so well recognised that, with few exceptions, it is demanded by wholesale dairymen receiving ordinary milk supplies from a distance. Experience has taught them that a proper temperature is the chief consideration in the keeping of milk.

When a pailful of milk has been drawn from a cow, in from ten to twelve minutes its temperature stands at from 88° to 92° Fahrenheit, and if its passage over the refrigerator is properly timed and not too speedy, its temperature should fall to within two or three degrees of that of the water as it comes from the inlet pipe. But the superficial area of the majority of refrigerators in use is much too small for the number of milkers on duty, and the tendency is to open the taps that the flow may keep pace with the supply brought to it, and thus the milk is made to emerge at too high a temperature. When this is associated with chilling in an apparatus placed at the end of the byre or in the polluted atmosphere of a contiguous and communicating boiler house, the milk, though considerably chilled, suffers gross contamination as it passes over the exposed corrugated surface in thin layers, and its latter condition may be worse than the first.

The advantages of having the cooler covered to protect the milk from gross atmospheric contamination are so obvious that it is surprising so very few are so equipped. Again, the receiving pan over the cooler should be covered with a lid furnished with a central aperture for the reception of the strainer.

It is the exception to find any other agent than water used on ordinary farm premises for the cooling of milk, and its efficiency depends on its temperature. In warm weather the greater use of ice for the preservation of milk would be a great advantage when it is not desired to submit it to pasteurisation. During the winter six months any supply of pure water serves the purpose well, but during warm weather, when milk cooling is most necessary, it is exceptional to find the temperature of the water less than 52° Fahrenheit, and it is often higher if the water tank or conducting pipe at any part of its course is not sufficiently deep in the earth to protect it efficiently from the rays of the sun. Spring water from a deep well conducted in pipes laid three feet below the ground surface has always a much lower temperature than any public gravitation supply.

As soon as each churn is filled with the chilled milk, if it is to be kept at the farm for some time, and especially if it is retained overnight for transport with the morning milk, the churn with the lid fixed hard down should be placed up to the neck in an overflowing cold water trough, specially dug out, and constructed in the floor of the milkroom. The inlet pipe should deliver at the bottom of the tank, the overflow being at the top, and when the full churns have been immersed for some time, the inflow may be reduced to almost nothing if the supply of water is not abundant. The trough should also have a plug at the bottom for complete emptying when necessary, after the manner of an ordinary bath. It should be sufficiently deep to suit the length and long enough to accommodate the required number of churns. Indeed, in any case where the milk supply is not required to be removed from the premises before two hours after milking (and this includes all evening milk kept overnight), there is little virtue in putting the milk over the chiller, and risking contamination thereby. If the churns when empty are put into the empty trough, they are at once pinned down to preclude buoyancy when the water is turned on, but if the trough be full, the churns are more easily pressed down to the bottom of the trough when weighted half full of milk, and then pressed down.

I conducted the following experiment on an autumn day, which showed that in a little over two hours the newly-drawn milk in a ten-gallon churn was reduced to within three degrees of the temperature of the water in the trough. The empty churn was immersed up to the neck in water registering 54° Fahrenheit, and a milker brought two and a half gallons of milk, with a temperature of 90° Fahrenheit, four times at intervals of twelve minutes, and as soon as it was drawn by him from four consecutive cows. This was poured direct through a metal sieve provided with a disc of cotton wool into the churn. Before adding the second cow's milk it was found that the temperature of the first two and a half gallons had fallen to 73° Fahrenheit. Before the third addition the temperature of the contained five gallons

registered 77° Fahrenheit, and before the last cow's milk was added to fill the churn the temperature of the seven and a half gallons in the churn was 79° Fahrenheit. The temperature of the contained ten gallons thereafter fell at the rate of 13° Fahrenheit per hour, and when dispatched it stood at 54° Fahrenheit. If the temperature of the water had been lower, the milk would have chilled more speedily. Quicker cooling would also be attained by utilising churns of less than ten gallons capacity.

It may be urged that this slower chilling of milk will enable some unnecessary multiplication of any bacteria that may be in the milk, but if the milk is produced cleanly, their number is negligible, and when handled in this way, the milk escapes the contamination associated with passing over an exposed refrigerator.

When released, the churns are not difficult to lift out of the water trough, and they should be left there until immediately before being placed in the transport wagon. In Lanarkshire we are advising the use of the water trough for the storage of full churns, whether the milk has been otherwise refrigerated or not. If the refrigerated evening milk in summer time is simply put into unimmersed churns standing on the floor, it will be found in warm weather that its temperature has risen fifteen degrees or more before it is sent away in the morning.

The use of *ventilated* or *unventilated* churns for the transport of milk is worthy of notice, and I cannot do better than quote a summary of the report of investigation into the merits of both types by the Dairy Research Station of Reading, which undertook an enquiry into the question in 1919 at the request of the then Board of Agriculture and Fisheries. The full report is contained in Supplement 19 of the Journal of the Board. *Summary:* "The ventilated churn can be defended only if it serves some necessary purpose. That it does not serve some necessary purpose seems evident from the following facts:—

(a) that it is not now used in other countries;
(b) that its use in England is dying out;
(c) that this unpopularity of the ventilated churn is coincident with improvement in methods of milking and after-treatment of milk.

"These factors constitute a proof, confirmed by the bacteriological contents of the udder, and the experience of those who adopt clean methods, that the causes of 'cow smell' are actual additions to the natural milk, made either during milking or at some stage before the milk reaches its destination. The remedy for 'cow smell,' therefore, is not the use of ventilated churns, but the introduction of clean methods. Nevertheless, it is true that dirty milk, when transported in a tightly-closed churn, arrives in worse condition than when put into ventilated churns."

The Cleansing and Washing of Milking and Milk Utensils and their Protection thereafter from Contamination.

The initial step is rinsing in clean cold water, followed by a thorough washing of all the cans in a tank of clean hot water, using washing powder, brushing by hand or machine, and again rinsing in clean cold water, followed by efficient steaming. Many people simply scald them after washing, and though fairly good, this is not so efficient as steaming as a means of sterilisation. They should be placed mouth downwards in an enclosed iron box and steamed for about ten minutes at a temperature of 210° Fahrenheit. The larger vessels should be inverted over a steam jet until they are too hot to be handled, and left for a minute to cool. If steam is not available, utensils should be immersed in boiling water for a few minutes. After sterilisation, the utensils should be kept in an air-proof cabinet, and the larger vessels, if kept in the atmosphere of the milkroom, should be inverted at an angle.

Having seen the milk put on transit from the premises of the producer, we may conclude that the control expected from the veterinary inspector ceases, and is taken up by other officials; and I need not dilate on the faults that require correction during transit, at the railway station, in the premises of the wholesaler or retail dealer, or in the home of the consumer.

And as my avowed intention was to deal with the production and protection of a clean and wholesome supply of raw milk, the curing of contaminated milk by sterilisation or pasteurisation, however necessary they may be for the better preservation and safer consumption of inferior qualities, does not come within the scope of my paper.

I have nothing to say against the pasteurising of the great bulk of our present supplies of milk, but we must ever keep in mind that in attempting the cure of polluted milk by this process we may be incurring a greater penalty in nutritional disease, and one that has not yet been very well measured. Let us hope that the need for such plant will gradually diminish with the gradual advance of hygienic production in this country. If I interpret British opinion correctly, it is that we should set before us the goal of a safe raw milk for the people, so produced, handled, and protected that it will keep sweet for a minimum of twenty-four hours, and when we have accomplished this for liquid milk for daily use, it may be prophesied that the standard of all products made from it will be much higher than it is to-day. Only such a goal as this is worthy of a progressive people; it is capable of attainment, and the attitude of mind its pursuit calls forth is infinitely to be desired to the fatalistic one of a complacent, inert dependence for all time on the merits of pasteurisation.

Increasing reversion to horse traction for haulage purposes is taking place, according to Mr. A. B. Charlton, secretary of the Shire Horse Society.

As factors in the change, Mr. Charlton enumerated economy in working, special adaptability to short journeys with frequent stops, and the pulling capacity of the horse.

"Metropolitan boroughs are now buying horses to reinforce their depleted studs," Mr. Charlton asserted, "and the cardinal and economic considerations of longevity and exemption from tax are combining to restore the horse to his position in the public service."—*Sunday Pictorial.*

The Etiology and Prevention of Rabies.

REPRINTED FROM "THE BRITISH MEDICAL JOURNAL."

The recent report by the Ministry of Agriculture of two cases of rabies in dogs in quarantine draws attention to the isolation which this island enjoys from a disease which is still very prevalent abroad. The Ministry imposes a six months' quarantine on all dogs entering this country; it is probable that the outbreak some years ago was due to a violation of this regulation by dogs brought over by aircraft. The two cases now reported occurred in dogs which had been confined for three days and three months respectively. It is a convincing demonstration that the quarantine is still very necessary, although to the owner of the dog it may be an irksome precaution. Some experimental work that has been undertaken abroad, however, suggests that it may soon be possible to substitute for it an equally efficacious method of protection.

These experiments consist in attempts, in Japan, America, and Italy, to immunize dogs by methods not requiring the long series of injections practised at the Pasteur Institutes. Högyes has devised a simpler method, which has been used for some time in Sofia with considerable success; only 0·11 per cent. of failures were reported in about 6,000 cases. A modification of the Högyes technique, requiring only six injections, has been in use in America, and over 15,000 domestic animals have been thus treated. There were about 1·5 per cent. failures, however, probably due to the inoculations being made some considerable time after infection. Recently, however, two Japanese workers—Umeno and Doi—have introduced a single injection method. Their vaccine is prepared from the brain and cord of a rabbit dying from a laboratory strain of rabies which kills the animal in seven days—that is to say, a "fixed" virus. To the ground-up nerve tissue is added four times its volume of a phenolized glycerin-saline solution, and the mixture is kept for a month in an ice-chest (or a fortnight at 18° to 22° C.) in order to reduce its virulence. It keeps much longer than ordinary rabies vaccines—about two to three months at room temperature. A single injection—the amount used depending on the weight of the animal—is given. In Japan over 30,000 cases have been thus vaccinated with only one failure, and in the areas where it has been used rabies has already been reduced by 75 per cent. Eichhorn and Lyon[2] have recently conducted a series of carefully controlled laboratory experiments on this vaccine with very successful results. In actual practice in the United States over 25,000 animals have been inoculated, with no failures. Unfortunately it is not known how many dogs were exposed to the disease. In the county of Los Angeles, California, alone, however, in 1923 there occurred 808 positive cases in dogs and nine human deaths from hydrophobia. A compulsory vaccination scheme has been put into operation there, and results will be awaited with interest. In Italy also the disease has assumed epizootic proportions,[3] and the same vaccine is in use there. So far, however, statistics are not available.

Meanwhile work on the etiology of the disease is still in progress elsewhere. Manouelian and Viala[4] have recently published an account of an organism which they claim to be the causal agent of rabies. In stained preparations it appears elongated, fusiform, pyriform, or spindle-shaped. Its average length is 1 to 2 μ, but smaller forms reaching the limits of visibility have been encountered. The body seems to be filled with chromatin granules and surrounded by a membrane. The observers have found them in the salivary glands as well as in the nervous tissue. They consider that Negri bodies result from the agglutination of these parasites. Levaditi and his fellow workers[5] have described a micro-organism which they believe is the cause of encephalomyelitis in rabbits. They hold that it is a protozoön belonging to the microsporidia (the group which includes the organism of silkworm disease discovered by Pasteur) and they have called it *Encephalitozoön cuniculi*. Manouelian and Viala consider that their organism, although distinct, is so similar that it belongs to the same genus, and they have in consequence named it *Encephalitozoön rabiei*. They have been able to demonstrate it in sections fixed in a special solution and stained with well known stains, such as Mann's, Giemsa's, iron haematoxylin, and so on. Results of biological and experimental work have not been published yet, however.

Kelser in America[6] has recently been able to show that, contrary to general opinion, Negri bodies can be found in "fixed" virus as well as in "street" virus infections (that is, natural infections). He was able to find them on the third day after infection, but not after the fourth day. However, minute refractile bodies were seen from the second day until death on the eighth day. These are possibly the same as seen by the French workers. The question of the etiology of rabies, while greatly advanced, cannot, however, be regarded yet as definitely settled until more confirmatory work has been undertaken.

[1] *Journ. Phys. and Path. Gen.*, 1924, xxi., p. 79.
[2] *Journ. Amer. Vet. Med. Assoc.*, 1924, lxiv., p. 602.
[3] *La Clinica Vet.*, 1923, Nos. 7 and 8.
[4] *Ann. de l' Inst. Pasteur*, 1924, xxxviii., p. 258.
[5] *Compt. rend. Soc. Biol.*, November, 1923, p. 984.
[6] *Journ. Amer. Vet. Med. Assoc.*, 1924, lxiv., p. 678.

The Times Johannesburg correspondent says that farmers in the Potgietersrust district of the Transvaal are losing cattle from "snotsiekte," a disease which they believe to be conveyed by the wildebeeste (gnu). Official investigations are being made in the infected area. The farmers have requested permission to destroy the wildebeeste.

Army Veterinary Service.

LONDON GAZETTE. WAR OFFICE. REGULAR FORCES.

Aug. 14th.—Major and Bt. Lt.-Col. J. J. Aitken, C.M.G., D.S.O., O.B.E., to be Lt.-Col. (June 28th).

The following Captains retire, receiving a gratuity (August 16th):—T. J. Davis, and is granted the rank of Major; J. G. E. Gallie.

Veterinary Service in the Free State.

"The proposals of the Minister of Agriculture for the reorganisation of the veterinary service of the Free State has not been approved by the profession," says the *Irish Times* of August 9th.

"Some time ago the Veterinary Medical Association of Ireland prepared a scheme, which provided for efficient veterinary inspection under the Contagious Diseases of Animals Acts and the Public Health Act, and dealt with other important veterinary matters, including research into obscure diseases which are causing enormous losses to live stock owners.

"The proposed scheme was accepted by the Minister as an effective means of meeting the requirements of the country in connection with the live stock industry.

"The Minister's official reply, however, was to the effect that owing to lack of funds the scheme could not be adopted at present. He suggested an alternative or interim scheme, whereby one whole-time county inspector would be appointed to perform the duties under the Contagious Diseases of Animals Acts, in place of two or three existing part-time inspectors, who would be dismissed on a month's notice or with a month's salary in lieu thereof. The salary suggested for the position was that at present paid to the ordinary inspectors in the Veterinary Branch of the Department.

"The Minister's statement was considered at a representative meeting of the veterinary profession in Southern Ireland, held in Dublin on July 17th. Those present (a report supplied by the Secretary of the Veterinary Medical Association says) considered it their duty, as guardians of the animal welfare of the country, to urge again upon the Government the pressing necessity of establishing, as soon as possible, an efficient veterinary service, in order:—

(1) To control and eradicate the contagious diseases of animals.

(2) To control or suppress contagious diseases transmissible from animals to man, for example—Bovine tuberculosis, rabies, etc.

(3) To carry out research into numerous obscure diseases causing enormous losses among live stock.

"It was pointed out that failure to detect an outbreak of a contagious disease like foot-and-mouth disease immediately on its appearance might mean the bankruptcy of the country in a very short time, and that consequently the curtailment of the veterinary service on the ground of expense would be very false economy indeed.

"Reference was again made to the great danger of the transmission of bovine tuberculosis to human beings, especially children, through drinking milk from cows affected with tuberculous udders. At the recent meeting of the British Medical Association, it was stated that 50 per cent. of the children who died under five years from tuberculosis died from bovine tuberculosis. Statistics have shown that about 90 per cent. of the cases of tabes mesenterica were caused by drinking milk containing the bacillus of bovine tuberculosis.

"It was resolved to protest against the scheme suggested by the Minister of Agriculture, because

(1) One whole-time county veterinary officer could not possibly discharge with efficiency all his duties under the Contagious Diseases of Animals Acts.

(2) By removing the subsidy, which existing part-time inspectors received for doing Departmental work in some poor districts in Ireland, they would be obliged to abandon practice there, and those districts would consequently be deprived of the services of a veterinary surgeon, which would be a great source of loss to stock owners.

(3) The salary and allowance for expenses were totally inadequate, and were not in accordance with professional *status* or the responsibilities of the position, and would not induce men of experience and ability with no other source of income to seek the appointment.

(4) No provision was made for the compensation of the existing part-time officers on their dismissal after, in several cases, many years of efficient service, at a period of their careers when they would be unable to make arrangements to meet the altered circumstances."

Care of Pit Ponies.

The Secretary for Mines has, says *The Times*, addressed the following letter to the secretary of the Mining Association of Great Britain on the subject of the care and treatment of pit ponies:—

"I am directed by the Secretary for Mines to say that repeated representations have been made to him and to his predecessors in Parliament and elsewhere in regard to the care and treatment of pit ponies; and that, while he is satisfied that the general allegations of neglect or ill-treatment which are sometimes made are quite unfounded, he thinks it worth while to call your attention to certain points that are always prominent in these representations, and about which there may undoubtedly be ground for complaint in particular cases. These are:—

"(1) Overwork of horses which may occur where they are employed for double shifts, particularly for two full drawing shifts; (2) the employment of horses which are markedly affected with greasy heel or broken wind, and of old horses which are getting past pit work; (3) the failure of drivers to report matters which call for remedy; and the failure of horse keepers and officials in charge of drivers to report fully on such matters to the manager or under-manager.

"When they arise, the first two causes of complaint are sometimes found to be due to the colliery not having in reserve sufficient horses to fill immediately the place of horses which are injured or ought otherwise to be regarded as temporarily disabled for work; and the third cause of complaint calls for disciplinary or other action on the part of the manager or under-manager.

"Mr. Shinwell feels sure that he may count on the co-operation of the Mining Association and of its constituent bodies and members in making an attempt to eliminate entirely these and any other causes of complaint in regard to the care and treatment of pit ponies. He therefore invites them to give the matter their careful consideration, to inform him of their views, and to take such action to this end as it may be possible for them to take. He understands that the practice of employing consulting veterinary surgeons, which is the subject of a recommendation in the third report of the Royal Commission on Mines, is now generally adopted. In any cases in which this may not be so he would urge its adoption, and he would also suggest that the publication of the reports of these consultants from time to time would be useful in furnishing accurate information on a matter which is so frequently before the public."

The Veterinary Record.

30th August, 1924.

MEAT INSPECTION.

The subject of meat inspection is of such vast importance to the Veterinary Profession that we make no apology for dealing with it rather freely this week. Two events lead us to take this course. In the first place the newly proposed meat regulations for England have recently been published (and have been considered by our Veterinary Inspectors' Committee), and in the second place, there has just been published a small handbook* by Dr. Gerald Leighton on the Meat Regulations for Scotland. This little handbook is of so great importance to our profession that we quote very fully from it.

INTRODUCTION.—For many years the question of establishing a uniform system and standard of meat inspection has agitated the meat industry and all connected with it. The fact that there has been no recognised system or standard has led to great divergencies of procedure in different places and by different inspectors. What would be passed in one place might be condemned in another, and this led to inequalities and injustice in the trade.

To Scotland has fallen the credit of being the first part of our country to establish a uniform standard *by law*. The uniform standard of judgment which is now a *legal* one in Scotland has also been issued by the Ministry of Health as a *recommendation* (italics here are ours), to be followed by meat inspectors (*sic*) in England—*vide* Preface.

This long-looked-for reform in our public health administration was only possible by reason of the fact that it had been long demanded by the public, the meat industry and Local Authorities, and, secondly, and perhaps even more important, that over 90 per cent. of the total consumption of home-killed meat in Scotland is dealt with in public abattoirs.

The Regulations . . . are the result of a prolonged inquiry carried out by the writer with the assistance of three Committees which dealt with (*a*) administration; (*b*) inspection in rural areas; (*c*) system and standard of meat inspection to be adopted.

The members of these Committees were thoroughly representative of all those in Scotland who were qualified to advise the Board upon the subject. Here follow the names of the members, amongst whom we note the following members of our profession:—

Committee (*a*), A. Gofton, D. Hamilton, A. M. Trotter. Committee (*b*), A. Gofton, F. W. Medlock, A. M. Trotter. Committee (*c*), S. H. Gaiger, A. Gofton, D. C. Matheson, A. M. Trotter.

The Sub-Committee which considered the question of the actual standard of meat inspection consisted of Dr. Leighton (Chairman), A. Gofton, D. C. Matheson and A. M. Trotter. The standard is given in the form of Schedules Nos. 1 and 2. In addition to the standard nineteen regulations are given, dealing with general administration.

REGULATIONS.—These have as their heading the words "The Public Health (Meat) Regulations (Scotland), 1924," dated June 24th, 1924, made by the Scottish Board of Health under Part IV. of the Public Health (Scotland) Act, 1897 (60 and 61 Vict. C. 38) and Section 1 of the Public Health (Regulations as to Food) Act, 1907 (7 Edw. 7, C. 32). The term "Uniformity Regulations" will probably be used colloquially.

Sect. 81 of the Public Health (Scotland) Act states the local authority of any districts within which or part of which regulations so issued by the Board are declared to be in force *shall* superintend and see to the execution thereof, and shall appoint and pay such officers for superintending or aiding in the execution of such regulations or for executing the same as the case may require, and the Public Health (Regulations as to Food) Act, 1907, which gives power to make regulations, states:—

The power of making regulations . . . shall include the power of making regulations authorising measures to be taken for the prevention of danger arising to public health from the importation, preparation, storage and distribution of articles of food intended for sale for human consumption. The regulations come into operation on August 1st, 1924.

DEFINITIONS.—No person shall be qualified to act as a Meat Inspector under these regulations unless he is either the Medical Officer of Health of the district, or a Veterinary Surgeon, or a person who, not being the Medical Officer of Health or Veterinary Surgeon, has received special training in the work of meat inspection, and prior to the first day of June, 1923, had not less than seven years practical experience in that work and has obtained from the Board a Certificate (which may at any time be cancelled or withdrawn) that he is qualified to act as a meat inspector in the execution of these regulations.

This article is one of the most important innovations in the whole series. It cuts out once and for all the placing in the hands of utterly incompetent

**Pocket Handbook of Meat Inspection: A Guide to the Public Health (Meat) Regulations (Scotland), 1924.* By GERALD LEIGHTON, M.D., F.R.S.E., Medical Officer (Foods), Scottish Board of Health. Edinburgh and London: William Hodge and Co., Ltd. 1924. (Fcap. 8vo, pp. viii+126. 6s. net.)

persons the important duty of inspecting meat. In the majority of cases the people to whom this work is entrusted ought to be the Veterinary Surgeons approved by the Local Authority and the Medical Officer of Health, with whom the Veterinary Surgeon should work and whom he may consult on occasion. The latter part of the section was introduced to meet the cases of a few men, who, not being either medical men or Veterinary Surgeons, have nevertheless devoted many years of their lives to the study of practical and theoretical meat inspection and who are just as well qualified as the professional men. These men have taken various examinations, and it would not have been fair to terminate their appointments. As time goes on, the Meat Inspector of any district will be the Veterinary Surgeon approved by the Local Authority.

Detention Officer.—No person shall be qualified to act as a Detention Officer under these Regulations unless he has had such experience and training as the meat inspector of the district may consider necessary to enable him to recognise any departure from the normal in the carcase, organs or viscera of an animal. Thus, a "Detention Officer" will pass all carcases and organs which are normal and will not decide as to fitness or unfitness for food of abnormal carcases or organs; he will only detain them. The Public Health (Scotland) Act gives a Veterinary Surgeon appointed for the purpose the same power as a Medical Officer of Health or Sanitary Inspector. (In England a Veterinary Surgeon has to be appointed a Sanitary Inspector or Inspector of Nuisances, to enable him to have the necessary power to seize unsound food. The Departmental Committee recommended an alteration of the present law to give the Veterinary Surgeon the necessary power, but nothing has been done.)

Records.—It is enacted that every Local Authority that has provided or established a public abattoir *shall* cause to be kept detailed records of all meat and organs destroyed, and every Local Authority *shall* cause detailed records to be kept relating to inspections and seizures in private slaughterhouses.

Licences.—The Local Authority, when granting licences for the use of premises as a private slaughterhouse *shall* specify in such licence the days and hours on which cattle or swine may be slaughtered, and the hours are to be fixed so as not to interfere with the butchers' business. If the butcher desires to kill animals during other hours, he must give the Meat Inspector twenty-four hours' notice.

Emergency Carcases.—Every carcase dealt with under this Article *shall* be ribbed and quartered before it is released as fit for human consumption, and any person who receives for sale for human consumption any carcase or part thereof or organs of an animal killed in any place other than a private or public slaughterhouse shall notify the meat inspector who will inspect it.

No body of a dead animal or any of the organs of an animal will be admitted to a slaughterhouse unless accompanied by (*a*) a certificate granted by a Meat Inspector or Detention Officer, or (*b*) by a Veterinary Surgeon that the animal has not died of a disease notifiable under the Diseases of Animals Act.

Any moribund animal admitted will be notified at once by the Superintendent of the Abattoir to the Veterinary Surgeon, or if no Veterinary Surgeon, to the Medical Officer of Health.

Bye-Laws.—These must be made by every Local Authority, Urban or Rural, for the control of slaughterhouses.

Meat Marking.—Where the Board are satisfied with the system of inspection in a district and the Local Authority apply for power to mark meat after it has been inspected and passed, such power will be granted, but meat will not be marked without consent of the owner.

Storing of Meat.—No person shall keep or store in any stable, byre or other premises in which live animals are kept, or in any room or apartment that is used as a living or sleeping room, or in any premises not kept in a clean and sanitary condition, any meat or meat food intended for sale for human consumption.

Hawking of Meat.—No person (other than those who have a shop) can sell meat from any cart, vehicle, basket, barrow, booth or stance unless he holds a certificate from the Local Authority in which he stores his food. Certificates to be granted yearly and to be withdrawn at any time in the interests of public health. Registers are to be kept of all places where food is stored.

Cold Stores.—A Register is to be kept of all Cold Stores, showing (*a*) situation; (*b*) name and address of owners; (*c*) name of person in charge; (*d*) nature of foods stored; (*e*) method of refrigeration used.

Local Authority may Combine.—Two or more Local Authorities may combine to carry out the Regulations, such as the appointment of a meat inspector.

Slaughtering of Horses.—Horses slaughtered for consumption in Great Britain, Northern Ireland, the Channel Islands and the Isle of Man are to be examined *ante* and *post-mortem*, in the same manner as if they were cattle, but if the flesh is to be exported, it is not necessary to inspect the flesh.

Note.—It is difficult to see the reason for this Regulation. The reason given is that it is for the countries receiving the horseflesh to inspect it, but it seems illogical to make it compulsory for foreign countries to inspect the meat sent to this country and refuse to inspect meat which is to be exported.

The instructions given are almost similar to those of the English Departmental Committee on Meat Inspection, as the Scottish Regulations were adopted in order to have uniformity. There are a few exceptions.

In Scotland.—Heads of oxen and swine which have the lymph glands only slightly affected and the lesions are small, calcareous and apparently inactive, can be cut out and the heads passed.

In England.—The heads are destroyed.

In Scotland.—Flesh infected with *cyst. bovis* can be passed if kept in cold storage for three weeks.

In England.—All flesh affected with *cyst. bovis* is destroyed.

In Scotland.—The leaf lard (peritoneal fat) of the pig must be raised to look for *cyst. cellulosæ.*

In England.—If no evidence of the parasite is visible in the carcase or organs, it is not necessary to raise the leaf lard.

In Scotland.—The hearts are to be incised in order to look for cysts and to judge the muscle.

In England.—If the carcase and all the other organs are normal and the heart, without being cut, appears normal, it is not cut.

Glands: *In Scotland.*—In naming the lymph glands, the ischiatic gland is not mentioned. A very large percentage of the Argentine hind quarters of beef found tuberculous have the lesions in the ischiatic lymph glands.

General Consideration.—Dr. Leighton passes some very necessary criticism on slaughterhouse hygiene, which, we hope, will not be passed over carelessly by those concerned. He also gives good advice to meat inspectors as to honesty of purpose, tact and unbiassed decisions. This is sound counsel, and should be followed by all officers, professional or otherwise.

Summary.

The whole regulations are as nearly perfect as could be expected at the first attempt to standardise meat inspection; doubtless they will be amended when experience shows any weakness. It is a great point gained that they have been made compulsory. In England the regulations are recommendations only, and of course do not bear the same authority and power. It should be the business of all concerned to see that they are made compulsory in England at the earliest possible moment.

The Scottish Regulations are a great credit to all concerned in the framing of them, as they are just and practical, and, so far as they affect the Veterinary Profession, they at last place Scotland in the same position as all other countries (England, excluding a few large towns, excepted), recognising that the Veterinary Surgeon by his training is best suited to have charge of meat inspection. While we appreciate the good work done by the members of our profession, who naturally looked after our interests while on the various committees, we desire to express our very grateful appreciation of the attitude adopted towards us by Dr. Leighton, not only with regard to those Regulations, but for his broad-minded, unbiassed address made at the Royal Sanitary Institute Congress held at Liverpool last month, from which we quote the following:—

"My own opinion is, and has been for many years, that the only person who is qualified from the very nature of his professional training to undertake all the duties of meat inspection and milk inspection is the modern veterinary surgeon. One must remember that meat inspection is really the science and practice of comparative theoretical and practical pathology, and the only person who receives a competent training in the ordinary course in this science is the man who has passed through the veterinary curriculum of a modern veterinary school. It is quite true that the medical student learns a certain amount of this kind of knowledge in his pathological duties, but by no means sufficient to qualify him as a food inspector. In past years many medical men have had to be at great pains to learn it in order to carry out the duties that have been thrust upon them. Meat inspection, however, to-day is very thoroughly taught in modern veterinary science. It can only be learned by at least one or two years' regular attendance at a large abattoir, under competent teachers, and then by daily attendance for a long time in a similar place. There used to be an opinion—and, indeed, some seem to think even yet—that meat inspection is a simple subject. So far from that being the case, those of us who have devoted most time to it are well aware that it is a study of years. My own opinion is, therefore, very strongly indeed, that in all large centres the actual work of meat inspection, at any rate at the abattoirs, should be carried out by veterinary surgeons, who alone have the necessary and adequate training. That is my answer to the question of what should be the training required in a meat inspector."

We strongly advise every veterinary inspector to provide himself with Dr. Leighton's book; it should find a welcome place in the library of every veterinary surgeon, even though he may not be actively engaged in meat inspection.

CLINICAL AND CASE REPORTS.

A Note on Canine Distemper.

By A. S. Schlingman, D.V.M., M.S.,
Research Laboratories, Detroit, Mich.

The observations recorded in this paper have been made from clinical and bacteriological examination of dogs suffering from distemper.

Although we fully appreciate the necessity of having more extensive data before making deductions, the observations are of such interest that it is felt that this report is justified at this time. These findings are presented as a preliminary report with the hope that it will interest other investigators studying the various phases of this disease.

The results embodied in this report are, in part, those found in carrying on the work on another phase of this subject which is, as yet, incomplete.

Since the cases were all obtained from the city dog pound, no definite history could be obtained, the animals procured being in various stages of the disease, as determined by clinical examination.

In carrying out the major project, it was deemed necessary to make cultures from the bronchi, as well as from the eyes and noses of the affected dogs, at various intervals. Realising the difficulties attendant upon the passage of the bronchoscope, with the subsequent swabbing of the mucous membranes of the trachea and larger bronchi, without the swabs becoming contaminated, a newer method following

somewhat the method used by Ferry* in his studies on the etiology of equine influenza, was worked out.

The dog whose trachea and bronchi were to be cultured was placed upon an operating table and completely anæsthetised with ether. The skin of the entire ventral surface of the neck from the sternum to the throat was shaved and thoroughly disinfected.

An incision 1 to 1½ inches long was made through the skin and subcutaneous tisssues along the median line about two inches above the sternum. The underlying muscles were then divided with a blunt instrument, exposing the trachea.

A sterile trocar and canula (⅛ inch) was then passed between the rings of the trachea, and after removing the trocar, a sterile swab on a No. 14 aluminium wire was passed through the canula until some slight resistance was met, when the free end of the wire was rotated so that the swab might become thoroughly saturated with the secretions present in the lower respiratory tract.

After the swabs and canula were removed, the wound was thoroughly cleansed, and the skin closed by means of one or two interrupted sutures.

Since the entire operation was carried out with strictest aseptic precautions, and the wound subsequently received antiseptic treatment, healing generally took place by first intention.

The operation was repeated as often as deemed necessary, making the second incision, either to the right or left of the median line or higher up on the neck.

Using this method, it was possible to take cultures direct from the trachea and bronchi, eliminating the secondary invading organisms found in the upper respiratory tract. No ill effects have been noted which were thought to have been due to the administration of the anæsthetic, or as a result of the operation.

Following are the symptoms shown at the time the dogs were obtained, with the results of the bacteriological findings:—

Dog No. 1.—Temperature 101° F., cough, mucopurulent discharge from both eyes and from the nostrils, which were partly sealed by dried discharges. Bacteriological findings: right eye, staphylococci and streptococci; left eye, same as right eye; bronchi, pure *B. bronchisepticus*.

Dog No. 2.—Temperature 102° F., cough, slight watery ocular discharge, muco-purulent nasal discharge, both nostrils sealed by dried discharges. Bacteriological findings: right and left eyes, streptococci; right nostril, staphylococci; left nostril, staphylococci and *B. bronchisepticus*; bronchi, *B. bronchisepticus*. At the end of three weeks, when the animal had apparently recovered except for a slight sneezing, *B. bronchisepticus* was again recovered from the bronchi, and again after three weeks more had elapsed. Three weeks later cultures from the bronchi were negative.

Dog No. 3.—Temperature 102° F., sneezing, very slight watery nasal and ocular discharges. Bacteriological findings: both eyes, sterile; left nostril, staphylococci; right nostril, staphylococci and *B. bronchisepticus*; bronchi, *B. bronchisepticus*. Three weeks later when recovery had apparently taken place, and again six weeks later, *B. bronchisepticus* was recovered from the bronchi in pure culture. Three weeks after the last recovery of the organism the bronchi were found to be sterile.

Dog No. 4.—Temperature 102° F., watery nasal and ocular discharges. Slight sneezing. Bacteriological findings: both eyes sterile; both nostrils, staphylococci; bronchi, *B. bronchisepticus*.

Dog No. 5.—Temperature 102° F., cough, mucopurulent discharges from the eyes and nose. Bacteriological findings: both eyes, staphylococci; both nostrils, staphylococci and diplococci; bronchi, staphylococci. Three weeks later, when improvement in the animal's condition had taken place, staphylococci were again isolated from the bronchi. *B. bronchisepticus* was not found in any of the cultures made.

Dog No. 6.—Temperature 103° F., cough, mucopurulent discharges from both eyes and both nostrils. Bacteriological findings: left eye, staphylococcus; right eye, staphylococcus; right and left nostrils, staphylococci; bronchi, *B. bronchisepticus* in pure culture.

It is of interest to note that *B. bronchisepticus* was recovered from the bronchi of five of the six dogs under observation. Of these five the organism was recovered in but two cases from the nasal discharges.

Unfortunately, dogs Nos. 1, 4 and 6 succumbed to the disease before a second culture could be made from the bronchi, and at a time when it was impossible to make *post-mortem* cultures.

It is of further interest to note that dogs Nos. 2 and 3, although apparently recovered as determined by clinical symptoms, continued to harbour the bronchisepticus bacilli for at least three weeks after recovery.

SUMMARY.

1. An operation is described by means of which cultures can be made from the bronchi of living dogs without the passage of the bronchoscope.
2. *B. bronchisepticus* was isolated from the bronchi of five of the six dogs under observation.
3. *B. bronchisepticus* was isolated from the nasal discharges in but two of the six cases.
4. Two of the dogs (Nos. 2 and 3) were found to harbour *B. bronchisepticus* for at least three weeks after apparent recovery had taken place. These animals should be regarded as being carriers of the organism and possible spreaders of the disease.

* FERRY, *Veterinary Journal* (London), April, 1912.

Generalised Actinomycosis in the Ox.

By J. HOWARD JONES, M.R.C.V.S., O.B.E., City of Edinburgh Veterinary Department.

Subject.—A red-polled bullock, three years old, in fair beef condition.

Post-mortem revealed actinomycotic lesions affecting the whole of the walls and mucous membrane of the rumen, reticulum, omasum and abomasum, the sub-

(*Continued at foot of next page.*)

DIVISIONAL REPORT.

Derbyshire Division.*

THE WORK OF THE N.V.M.A.

A meeting of the Derbyshire Division was held at the Royal Hotel, Derby, on Tuesday, July 15th, 1924. The President (Mr. J. C. DeVille) presided, and there were also present Mr. G. H. Livesey (General Secretary of the National Veterinary Medical Association), Major T. V. Bagshaw, Messrs. McIntyre, H. Briggs, Howe, A. Levie, W. F. Aston, F. T. Prince, J. C. Heather and the Hon. Sec. (Captain O. V. Gunning).

The minutes of the previous meeting were taken as read and approved.

Mr. LIVESEY said since he had become General Secretary it had been his object, so far as he was able, to get in personal touch with all the members of the Association throughout the country, and he had found his visits to the various divisions to be a very pleasant part of the duties that fell to his lot. He was delighted to find the enthusiasm there was for the profession and its welfare, and the sincere desire for its progress. The apathy of which one heard so much was not so greatly in evidence as one would expect. It was to be found chiefly among men in country practices, but such men found it extremely difficult to get to places where meetings were held, yet even these men still had the interests of the profession at heart.

Speaking of the foundation of the Association and its progress, Mr. Livesey said the idea at the back of the mind of the late Mr. William Hunting was the amalgamation of all local associations into one big association, which would play a part in their profession similar to that of the British Medical Association in the medical profession. That had gradually come to pass. Things had not gone smoothly all the time, for local associations had feared that they would become merely nonentities merged in the parent body. That idea must be dispelled, for the strength of the Association depended entirely upon the strength of the divisions. It was only by men meeting and discussing things by word of mouth that they got that good feeling and understanding one with another that was so necessary to the profession.

The executive work in the Association was considerable. When he undertook the secretaryship he understood that all that would be required would be a part-time attendance. The fact was that there was enough work to keep the secretary busy all the week from morning to night, Sundays as well. Mr. Livesey went into the details of the large amount of work necessary in getting out the *Record* week by week, and of the labours of the Editorial Committee. The Finance Committee met once a month, and acted also as an Advisory Committee. An Appointments Committee, the necessity for which arose out of a difficult colonial case, had done important work, and there was no doubt that as the results of its efforts and by giving evidence at the enquiry by the Government into foot-and-mouth disease, there would be recommendations to the Ministry of Agriculture for improvements in the conditions of service and pay of veterinary officers. Such benefits, if granted, would repercuss through the whole world and assist those in the colonial services. The Biological Committee tried to get legislation for the control of tuberculin, but obstruction came from the Ministry of Agriculture. The veterinary profession still wanted some guarantee that if they bought tuberculin they would not get some of the inert material that was on the market. They also wished the sale of tuberculin restricted in such a way that animals could not be doped before the veterinary surgeon went to make a test. They knew that the system of fraud was prevalent in some districts, and the Biological Committee did not intend to cease work. Another committee was working on the articles of association, as they did not wish to be saddled with the word "Limited," but desired to become incorporated or to obtain a Royal Charter. Still another committee was considering the fees to be paid to veterinary inspectors under the Milk and Dairy Orders. It was thought best that the men called upon to do that kind of work should make the best terms possible with the client, remembering that it was the producer who had to pay. Fees that were too high would go a long way to prevent the extension of the demand for Grade A milk. At present the Committee was waiting to see if the new orders were coming out, and if local authorities were to engage the veterinary inspectors. There was also the Veterinary Inspectors' Committee, which had in hand the question of fees of part-time officers, and many other matters of great importance, including the inspection of meat.

Mr. Livesey appealed for greater interest in the quarterly meetings of the Council of the N.V.M.A., to which all these committees reported, and said that every division ought to be personally represented.

(*Continued from previous page.*)

stance and capsule of the liver and both kidneys. Peritonitis was present, with œdema and adhesions between the enormously thickened parietal and visceral membranes, which adhesions showed early actinomycotic growths. There were also present adhesions between the visceral and parietal pleuræ with considerable œdema. Diagnosis of actinomycosis was corroborated by microscopical examination of sections. It is rather curious to note that there appeared to be no microscopic lesions in or on the head, tongue, palate or pharynx. I regret that neither *ante-mortem* history nor observations are available.

I am recording this case in the belief that generalised actinomycosis is of very rare occurrence, although I have seen well-established actinomycosis of the walls of the rumen and reticulum in no less than five cases, and have found lesions affecting the liver substance, hepatic and portal lymph glands, upon several occasions at various times during the past four years in the course of meat inspection duties, and among these are included several in which no lesions were apparent in or on the head or tongue.

*Received on July 28th.

A good many men in the country said, " What is the good of the ' National ' ? What good have I got out of it ? " His answer was that if they only went into any society for what they could get out of it they were bound to meet with disappointment, and they deserved to be disappointed. If they went into an association of professional men with the idea of what service they were going to give to their profession, they would be astonished at the good that would come back to them. There had been in their profession too much " dog in the manger" in the past. They wanted more generosity and good feeling. Some veterinarians had to thank the Association for many things that did not get reported in the Press. One thing they got out of their subscription of ninepence farthing per week was the *Record*, which cost eightpence halfpenny per week to produce. That left only three farthings for the work of the Association, which, nevertheless, was able to show a profit.

Speaking of Bye-Law 53 of the Royal College, Mr. Livesey asked how the public could have a good opinion of members if they did anything derogatory to the profession. It was the duty of members of divisions to stop those malpractices by getting full evidence and reporting to the College, so that the Registration Committee might take action if necessary. Yet two-thirds of the cases at present reported to College had to be struck out for lack of sufficient and proper evidence. It was generally those who complained most who did least to assist in getting full details of complaints. The Registration Committee tried to deal fairly with those cases and was reluctant to strike a man's name off the Register unless there were the amplest and strongest grounds for it.

Mr. Livesey then dealt in detail with several examples of unprofessional conduct, and pointed out how a member might infringe the bye-law by the employment of an unqualified assistant, a practice which he strongly deprecated.

Mr. Howe expressed the opinion that never in the history of the profession had there been need for greater support of the National Medical Veterinary Association. Mr. Livesey's review of the work going on proved the necessity of every member of the profession becoming a member with a real live interest. They had to bear in mind that unity was strength, strength numerically was power, and power in an organisation like that meant not only success for the profession, but benefit to the individual member. Mr. Howe went on to say, in contrasting the medical profession with their own, that there was something wrong. Not one member of the veterinary profession, no matter the amount of voluntary work he did during the war, had received even a letter of acknowledgment for that work. Appointments on benches of magistrates never came the way of the profession, though there were certain cases in which their special knowledge would be extremely valuable. The time was not far distant when the prestige of their profession would have to be enhanced. Speaking of the size of membership of local associations and of the "National," he said they needed to adopt the Rotary motto of " Service, not self."

Mr. Levie said that from time to time he had said some very hard things about the Royal College and the " National," but for all that he lived for the good of his profession. Speaking of covering, Mr. Levie said there was nothing in the Charter or bye-laws of the College to prevent a veterinary surgeon employing an unqualified man. He wished to know if those powers were going to be sought for. He did not think any success would be met with. It was a serious thing that any chemist could use the word "veterinary" in his sign. It was a serious thing that those chemists could sell more drugs than could the practitioner. The profession was kept down not only by its own members, but also by every authortiy that had anything to do with it, and, worst of all, by the medical profession. He agreed with the remarks of Mr. Howe on the necessity for a veterinary surgeon on each list of magistrates.

Mr. Prince expressed himself as delighted at Mr. Livesey's remark that the smaller associations, like the Derbyshire, were doing good work, in view of an opinion of a midland member that the smaller associations did not help a man in any way. Before the Derbyshire Association was formed he knew only two members of the profession sufficiently well to shake hands with them, and he referred to his professional neighbours as opponents. Since the Association had come into being he had formed a better opinion of his neighbours, and from no other source had he derived so much pleasure as from the attendance at meetings.

Major Bagshaw, in a series of questions, said one matter that had crippled discussions in the local Association was the lack of knowledge of the power to discuss unprofessional conduct. He asked if veterinary students came under the ban of employing unqualified men. It was the only chance some young men at College had of learning certain things. Major Bagshaw also made reference to a circular a number of them had received about making fabulous fortunes out of the sale of patent medicines, and asked if that were professional etiquette. He added that the circular was anonymous and obscure.

(*To be continued.*)

Man Outdistances Horse.

An advantage of 19 miles 438 yards lay with Mr. C. W. Hart on Saturday morning when the sixth and last day in the contest between himself and the horse Saucy Lassie was begun at the Crystal Palace. Hart was in splendid condition, but the horse appeared very tired.

In the first two and a half hours the man covered ten miles and his opponent thirteen miles and one lap ; but he started late, covering only one mile in the first hour, against four miles by Saucy Lassie. In the afternoon the horse travelled twenty-one miles, compared with the runner's thirteen. At 5 p.m., however, Hart was still almost eight miles ahead.

In spite of the uncertain weather, the last stages were witnessed by an increasing crowd of spectators. The contest came to an end at 6 p.m., the horse being withdrawn two hours earlier than the hour originally fixed for the conclusion of the race. Hart was declared the winner by seven miles 1,022 yards, the total distances being :— The man, 345 miles 880 yards ; the horse, 337 miles 1,618 yards.

NOTES AND NEWS.

Sept. 8-15—N.V.M.A. Annual Congress at Aberdeen.

All arrangements for Aberdeen are now practically complete except the booking of seats on the trains. Though a hundred more railway vouchers have been issued than were used last year, there has been a very poor response to the General Secretary's offer to book special coaches on the trains. The list closes to-day, Saturday, but any requests for seats received by Monday morning will possibly be in time.

The attendance promises to be large and representative, and it is hoped that many more will find that they can get away from their practices at the last moment and avail themselves of an exceptionally pleasant holiday. An additional attraction has been added to the programme owing to the very kind invitation of the Warden Insurance Company to entertain members and their friends at His Majesty's Theatre, Aberdeen, on the evening of Thursday, the 11th September.

A point to be noted by those who are attending the Congress is that ladies will be admitted and will be welcome at the Inaugural Meeting on Tuesday, the 9th, when the address of welcome will be delivered by Sir George Adam Smith, Principal of the University, and at which Lord Aberdeen and other guests are expected to be present. Ladies will find this Congress probably more interesting than any in former years, and we hope they will take a great interest in all the proceedings and make a point of being present at both the opening and closing meetings.

The following additions to the programme have been made by the Provisional Committee :—

On Tuesday, at 3-30, a drive round Aberdeen and surrounding places.

On Wednesday, Professor Neilson (of Copenhagen) will read his paper on "Sterility," immediately after the conclusion of the discussion on Dr. Crew's paper. His demonstration will take place at the Operations Session on Thursday.

Members and ladies are requested to assemble at the Mitchell Hall, on Tuesday, 9th, at 10 a.m. prompt, for the Inaugural Meeting and Address, and to meet again in the Quadrangle, Marischal College, at 3-30 p.m. for the drive round Aberdeen.

Ladies are also invited to be present at the Rowett Institute on Wednesday.

Our readers should be sure to see that they get their copy of next week's *Record* sent on to them, as it will contain a special feature which will be of great interest.

CORRESPONDENCE.

Congress Precautions.

To the Editor of The Veterinary Record.

Sir,—It is certainly most kind of Mr. Duncan Cumming, of Peterculter (pronounce it Peter Cooter, please), to warn his southern friends that they will need some additional warmth on Deeside in September. There is no scarcity of good whisky there, however, and if anyone is cold just ask for a "Birse tea" (tea with a "cinder" in it), and you get literally an eye-opener. Let Mr. Cumming beware of a run on *his* thermos flask !

But there is another danger besides pneumonia in going so far into the land of the "loons" and "quienies,"—and "doddies." It is on record that a ring of Hebrew financiers sent a syndicate to the far north to see if there was a good business opening in Aberdeen. Time went on, and no reports, either good or bad, found their way south to headquarters. Fearing for the safety of their friends, they sent a second deputation to hunt up the first. After much search they found the first lot in miserable circumstances, and, as the poet has it, "broke to the wide." Yes, they can cut things very fine there, so don't let anyone go with the idea of starting opposition in *that* district. Your mention of kilts, Mr. Editor, touches a very brittle subject. Have you considered whether the editorial calves would be distinguished looking enough to obtrude themselves below the hem of a kilt ? To look well in the kilt a man must be a "braw" man, and remember he has also to wear a trocar stuck in each stocking ! By all means let the southern strangers keep warm (both overcoats and Birse tea may be needed in that climate), but don't let any of them go foolishly trying to play a game of "Tommy Dodd" with an Aberdonian. It is a foregone conclusion : disaster !—Yours, with caution, Oh Fy Ay.

Obstetrics.

To the Editor of The Veterinary Record.

Sir,—I am glad that my note on the breech presentation has been the means of drawing remarks from such an experienced practitioner as Mr. Edwards ; the design of the communication was to provoke discussion. I am far from wishing to assert that every case of breech presentation is to be dealt with in the manner I described, but I maintain that if the hind legs of the calf are fully extended forward, it is nearly always possible to extract the calf as it lies, and that it ought to be attempted. Mr. Edwards is wrong in stating that in my case the fœtal pelvis was in the maternal vagina—it was wedged in the anterior of the pelvis, and could not be moved. The cow, a big strong animal, had been straining most of the day ; the calf, though a twin, was a large one, and I am confident delivery would not have taken place without assistance. It is, of course, impossible to extract the calf by the means suggested if one or both hocks are accompanying the fœtal pelvis into the passage, and if the hocks cannot be extended, resort must be had to embryotomy. I am envious of the facility with which Mr. Edwards disarticulates the fœtal femora, and confess to having found it a long and tiresome job. With regard to the foal delivered with the head below, between the fore legs, that fœtus was a twin and was small. I do not consider that, in a similar presentation with a full-grown foal, extraction is possible without embryotomy, and I quite think that Mr. Edwards' chisel for severing the neck is the instrument of choice in such a case.—Yours faithfully, W. R. Davis.

Enfield.
August 23rd, 1924.

"Record," Errata.

To the Editor of The Veterinary Record.

Sir,—You are to be congratulated on the few errata in *The Veterinary Record*.

In my article in to-day's, the mistake in the last word, "potent" for "patent" is so obvious that perhaps a correction is unnecessary. Still, as it is "the last word" it may be expedient.

Also, if you do this, you might note the omission of "gr." after apomorphine $\frac{1}{20}$.—Yours faithfully, W. F. Widden.

131 Lancaster Road,
North Kensington, W.11.

The Editor begs to acknowledge the receipt of the following :
Communications from Messrs. G. L. Bradley and J. Cameron, Capt. E. Patrick, Major P. J. Simpson and Sir F. Smith.

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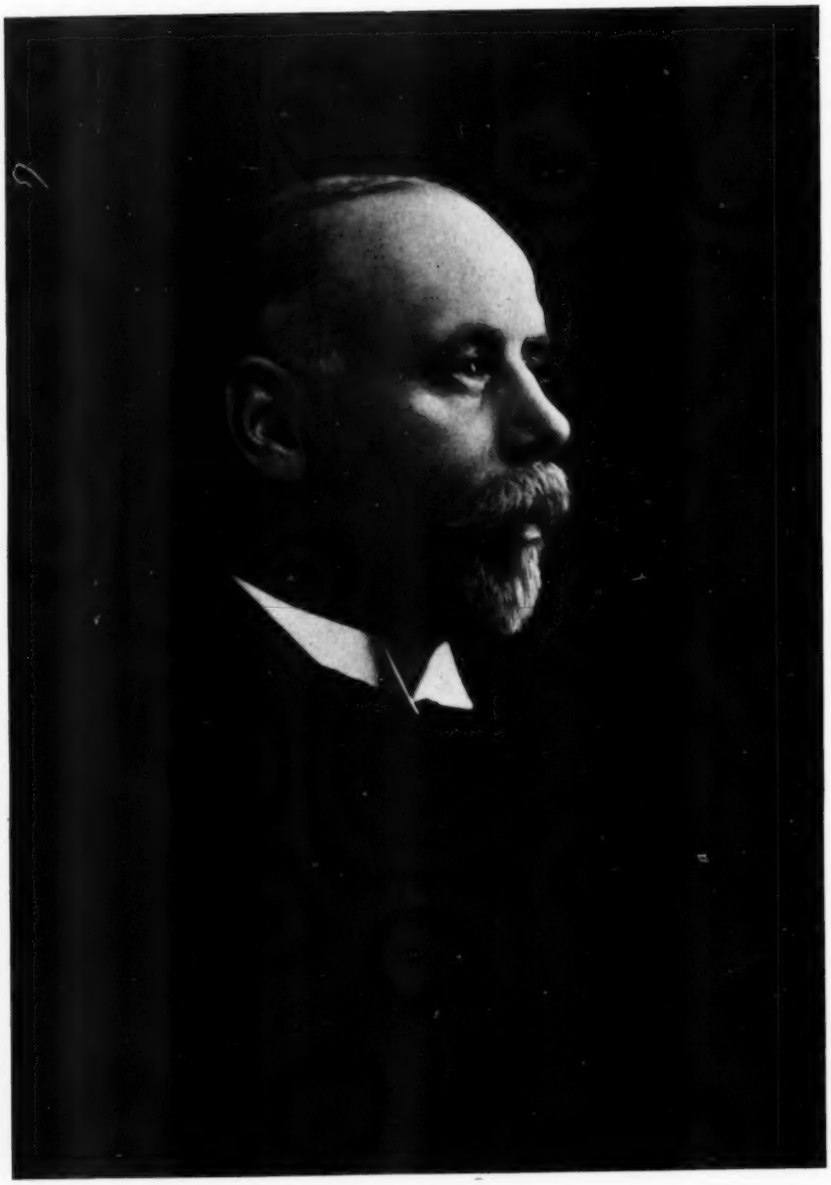

HENRY J. DAWES, ESQ., F.R.C.V.S.
PRESIDENT, 1924.